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U.S. Department of Commerce

Before the Subcommittee on Communications
Committee on Commerce, Science, and Transportation
United States Senate

July 31, 2001

EXECUTIVE SUMMARY

The National Telecommunications and Information Administration (NTIA) serves as the spectrum manager for the Federal agencies and is the principal adviser to the President on telecommunications policy. Because of NTIA's unique role, the agency must balance the spectrum interests of the Federal agencies while also advancing policies that promote the benefits of technological developments in the United States for all users of telecommunications services.

The spectrum allocation process originally established by the Communications Act of 1934 has grown and adapted to change in both private sector and Federal government spectrum requirements and the introduction of new technologies. The Federal Communications Commission (FCC) on behalf of the private sector and the NTIA on behalf of the Federal agencies have coordinated their efforts on almost a daily basis to ensure that the spectrum needs of the private sector and Federal government are met now and in the future. Unfortunately, this task is becoming more complicated given the increasing proliferation of wireless technologies and applications. Available spectrum is particularly scarce in the popular frequencies below 3 gigahertz (GHz). Of this spectrum below 3 GHz, over 55% is shared, 14% is Federal government exclusive, and 31% is non-Federal government exclusive. Despite congestion in these frequencies, new demands for spectrum below 3 GHz continue to develop. Thus, finding spectrum below 3 GHz for the deployment of new technologies such as third generation mobile wireless (3G) services will be a complex and challenging process.

Over the past decade, there has been tremendous growth worldwide in the use of cellular-based wireless telecommunications systems. The Department of Commerce and NTIA believe that this global growth will continue. The 3G systems under discussion propose to provide mobile and satellite-based broadband capabilities. While current cellular and PCS wireless systems are expected to evolve to 3G technology over time, there is a strong desire from the wireless industry for additional spectrum now to establish 3G networks.

In recognition of this growth and the trend toward global markets for wireless services, the International Telecommunication Union (ITU) forecast that 160 MHz of additional spectrum would be required for

3G systems. This amount is over and above that spectrum already allocated internationally for the mobile service that supports 1- and 2G systems. The ITU identified several frequency bands that could be used for IMT-2000 systems. The United States is now in the process of deciding which of the various frequency bands is most appropriate for the implementation of 3G services, noting that our domestic requirements may be different from other nations' requirements.

As a result of cooperation between the Department of Commerce, the Department of Defense, the Federal Communications Commission (FCC), and other Federal agencies, the Department of Commerce, under guidelines set forth last year, developed an ambitious action plan to identify spectrum for 3G services. To date, NTIA and the FCC have released interim and final reports on the 1710-1850 MHz band and 2500-2690 MHz band, respectively; conducted a government-industry outreach program; and participated in the State Department's outreach program to foreign governments and international bodies. In addition, the FCC issued a notice of proposed rulemaking addressing 3G spectrum.

Because of the complex issues surrounding the allocation of spectrum for 3G services, there is a general agreement among Department of Commerce, the FCC and the affected Federal agencies to continue these efforts so that we may study carefully the various spectrum options available to arrive at the best possible decision.

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Opening Remarks

Mr. Chairman, Ranking Member and other members of this subcommittee, I want to thank you for inviting me to testify today on spectrum matters relating to the spectrum allocation process and the accommodation of third generation (3G) wireless systems in the United States. I am William T. Hatch, Acting Assistant Secretary for Communications and Information, and Acting Administrator of the National Telecommunications and Information Administration (NTIA) within the Department of Commerce. I am also the Associate Administrator in NTIA's Office of Spectrum Management.

One of NTIA's responsibilities is to serve as the President's principal advisor on telecommunication policies. The agency's other primary responsibility on behalf of the President is to manage the radio frequency spectrum used by the Federal agencies in satisfying their missions. In this role, NTIA processes the Federal agencies' request for frequency assignments; provides Executive Branch leadership in coordinating both current and future spectrum requirements among the Federal agencies; and with the Federal Communications Commission (FCC) and the Department of State, develops and promotes positions at Treaty Conferences and other technical and management fora of the International Telecommunication Union (ITU) regarding United States spectrum management interests. Because of NTIA's unique role, the agency must balance the spectrum interests of the Federal agencies while also advancing policies that promote the benefits of technological developments in the United States for all users of telecommunications services.

NTIA's management of the Federal use of radio spectrum also promotes public safety and competition. As the managers of Federal spectrum, the agency is trying to improve efficiency, increase private access to spectrum resources, and plan for future spectrum needs, including those relating to public safety. These goals will become increasingly important as global uses of satellite and wireless devices increase. In this regard, I am pleased that the Subcommittee is looking into the matter of the allocation process and 3G wireless services, and would like to begin my remarks today by giving a brief background on the national allocation process, our accomplishments on 3G to date, and our plans for the future.

National Allocation Process

In 1934, the Communications Act was signed into law establishing the respective responsibilities for spectrum management in the United States. The statute reserved to the President the authority to make radio frequencies available to all stations belonging to or operated by the United States. NTIA exercises this authority on behalf of the President ensuring that federal agencies can meet their critical communications needs in the areas of national defense and security, air safety, maintenance and preservation of our natural resources, law enforcement, management of national disasters, exploration of space, and other Federal government services and functions. The Communications Act of 1934 also created the FCC as an independent agency with the responsibility to manage the spectrum to meet the needs of the state and local governments and the private sector.

To meet the respective needs of the private sector and federal government, the President, through NTIA and its predecessors, and the FCC over the past 67 years have allocated approximately 300 GHz of usable radio spectrum into government exclusive, non-government exclusive and "shared" bands. This 300 GHz of usable spectrum has been divided up over the years into approximately 900 bands, each being allocated to one or more of 41 radiocommunication services such as broadcasting, mobile, fixed, and mobile satellite.

The FCC makes domestic spectrum allocation decisions through public rulemakings. NTIA coordinates its allocation decisions in government-exclusive bands through the Interdepartment Radio

Advisory Committee (IRAC), which is comprised of representatives from the major spectrum users among the Federal agencies. The FCC and NTIA coordinate on any spectrum allocation decisions involving "shared" bands. The FCC and NTIA work together on a daily basis to coordinate spectrum decisions that affect their mutual constituencies and to ensure that the current and future communications needs of both the government and private sector are satisfied.

Spectrum Use

Over the years, spectrum use has expanded from the very low frequency ranges to the higher frequency ranges. As shown in Figure 1, over 93% of all licensees and Federal government frequency authorizations are in the 0 to 3 gigahertz (GHz) range. Of the spectrum below 3 GHz, 14% of the spectrum is Federal government exclusive, 31% is non-Federal government exclusive, and the remaining 55% is shared. Throughout the usable spectrum, NTIA has authorized the use of some 440,000 assignments for Federal government use and the protection of spectrum used by our neighbors, Canada and Mexico, and other frequencies specified by the FCC. Approximately 40% of the assignments authorized by NTIA for Federal agency use are used by the Department of Defense as shown in Figure 2. NTIA processes approximately 300 to 500 Federal agency requests for frequency assignment actions daily.

The entire spectrum management process has to be flexible, dynamic, adaptable to changing requirements, and timely to meet the national needs for spectrum. The spectrum below 3 GHz is extremely congested, and thus, finding spectrum below 3 GHz for the deployment of new technologies such as 3G services will be a complex and challenging process.

I would now like to address how the national spectrum management process has dealt with and will continue to deal with finding additional spectrum for 3G services.

3G Background

Although in the United States our wireless services are not generally distinguished by a "generation" label, we might classify the early cellular telephones as the "first generation" of wireless services that brought nationwide mobile telephone services to hundreds of thousands of Americans.

Building on the success of cellular service, the current personal communications services ("PCS") could constitute the "second generation" of wireless services. These services bring digital voice and messaging services to the nation. In recent years, there has been robust competition in the field of wireless services. This competition has promoted lower rates, greater customer choice, and higher quality of service.

Over the past decade there has been a tremendous growth worldwide in the use of cellular-based wireless telecommunications systems. The Department of Commerce and NTIA believe that this global growth will continue. The "third generation" (or "3G") systems advanced by industry propose to provide mobile and satellite-based broadband capabilities. While current cellular and PCS wireless systems are expected to evolve to 3G technology over time, there is a strong desire from the wireless industry for additional spectrum now to establish 3G networks.

In recognition of this growth and the trend toward global markets for wireless services, the International Telecommunication Union (ITU) has considered the spectrum requirements for evolving 3G systems, which is internationally termed International Mobile Telecommunications-2000, or IMT-2000. At the May 2000 World Radiocommunication Conference (WRC-2000) in Istanbul, Turkey, an ITU-established agenda item called for the review of spectrum and regulatory issues for advanced mobile applications in the context of IMT-2000. The ITU acknowledged the need to provide additional spectrum, particularly for the terrestrial component of IMT-2000 applications. The ITU forecast that 160 MHz of additional spectrum would be required for 3G systems. This amount is over and above that spectrum already allocated internationally for 1- and 2G systems. The ITU identified several frequency bands that could be used for IMT-2000 systems. However, member administrations of the ITU retained the right to implement any of the bands in any time frame, for any service or technology, and could use any portion of the identified bands that they deemed appropriate to satisfy national requirements.

Current Status

In October 2000, then President Clinton signed an Executive Memorandum which stated the

need and urgency for the United States to select radio frequency spectrum for 3G. The Memorandum articulated principles to serve as guideposts for future actions that would be taken related to the development of 3G, and directed Federal agencies to undertake certain activities. Under the Memorandum, the Secretary of Commerce was directed to work cooperatively with the FCC to take certain actions that would enable the FCC to identify, in coordination with NTIA, 3G spectrum and to auction licenses to competing applicants by September 30, 2002. In addition, the Secretary of Commerce was directed to work with government and industry representatives through a series of public meetings to develop recommendations and plans for identifying spectrum for 3G wireless systems. The Secretaries of Defense, Treasury, Transportation, State and other agency heads were directed to participate and cooperate with this government-industry group. The Secretary of State was directed to coordinate and present the views of the United States to foreign governments and international bodies. The FCC was encouraged to participate in this government-industry outreach program and to initiate a rulemaking to identify spectrum for 3G, in coordination with NTIA, with the goal of allocating 3G spectrum so that licenses could be made available via auction by September 30, 2002.

As a result of cooperation between the Department of Commerce, the Department of Defense, the Federal Communications Commission (FCC), and other Federal agencies, the Department of Commerce, under guidelines set forth by the Executive Memorandum, developed an ambitious action plan to identify spectrum for 3G services. To date, NTIA and the FCC have released interim and final reports on the 1710-1850 MHz band and 2500-2690 MHz band, respectively; conducted a government-industry outreach program; and participated in the State Department's outreach program to foreign governments and international bodies. In addition, the FCC issued a notice of proposed rulemaking.

We are now in the process of deciding which of the various frequency bands is most appropriate for the implementation of 3G services in the United States. The possible bands for allocation for the terrestrial component of IMT-2000 in the United States include the 698-960 MHz,

1710-2025 MHz, 2110-2200 MHz, and 2500-2690 MHz bands. All of these bands are being considered in the FCC's rulemaking process. Two bands, however, the 1755-1850 MHz band (exclusive government spectrum) and the 2500-2690 MHz band (exclusive non-government spectrum) require a more extensive analysis to determine their potential to accommodate 3G services. NTIA has studied the 1755-1850 MHz band and the FCC has studied the 2500-2690 MHz band and the study reports have been entered in the record of the FCC's 3G rulemaking for public comment.

NTIA Spectrum Report

The NTIA report noted that the 1755-1850 MHz band supports various Federal functions: space telemetry, tracking and control (TT&C); medium-capacity fixed microwave; precision guided munitions; tactical radio relay training; and aeronautical mobile applications such as telemetry, video and target scoring systems. This band is currently allocated on an exclusive basis to the Federal Government for fixed and mobile; and in the 1761-1842 MHz portion, space operation (Earth-to-space) and space research (Earth-to-space) services. This allocation supports Federal space tracking, telemetry and command. Fixed links are operated by Federal agencies for voice, data, and/or video communications where commercial service is unavailable, excessively expensive, or unable to meet required reliability. Applications include law enforcement, emergency preparedness, support for the national air space system, military command and control networks, and control links for various power, land, water, and electric-power management systems. Other fixed links include video relay, data relay, and timing distribution signals. Probably the most critical system in the band is the USAF Space Ground Link Subsystem (SGLS). This system, via Earth-to-space uplinks in the 1761-1842 MHz band, controls the U.S.

military satellites, including telecommunications satellites, intelligence gathering satellites, the Global Positioning System (GPS) satellite constellation and U.S. allies.

The NTIA report studied three options as shown in Figure 3 for sharing or segmenting the 1710-1850 MHz band and provided estimated cost information for relocating Government systems to other bands based on the agencies' analyses of their respective systems. In its report, NTIA concluded that without some form of real-time coordination among IMT-2000 operators and the Federal users, sharing between the IMT-2000 systems and Federal ground and airborne systems would be problematic. For example, a Department of Defense analysis (contained as an appendix to the NTIA report) indicated that IMT-2000 base stations would interfere with the control of Federal Government satellites. The Defense Department asserted that it would cost $3.95 billion (fiscal year 2002 estimate) to relocate its systems from the 1755-1850 MHz band assuming no relocation of satellite systems until the end of their projected useful life and that such relocation could not be completed before the year 2017. The relocation scenarios were contingent on whether spectrum could be identified to which the agencies' operations could be moved.

In its report, NTIA discussed the possible ways in which the 1710-1755 MHz band could be used for 3G services. NTIA previously identified the 1710-1755 MHz band for reallocation to the private sector on a mixed-use basis under the requirements of the Omnibus Reconciliation Act of 1993 (OBRA-93). However, under OBRA 93 the Federal Power Administration and fixed links supporting safety-of-life services were exempted from the requirement. In addition, NTIA protected operations within 16 military areas used for large-scale training exercises. In its final report, NTIA noted that one possible option to accommodate 3G services within the band would be to relocate Federal systems from this band completely if comparable spectrum for these military operations could be found and the Federal Power Administration services were willing to relocate on a voluntary basis. Identifying comparable spectrum is important to the 3G spectrum allocation process because of the need to continue important federal services and because of the provisions of the National Defense Authorization Act for Fiscal Year 2000, which protects Department of Defense uses of the spectrum unless alternative

spectrum can be identified that preserves essential military capability.

Outreach Programs

To obtain much-needed technical information and to develop a better understanding of industry's needs, NTIA held a number of industry outreach sessions in which Federal agencies and industry exchanged information on various 3G issues. In addition, the wireless industry hosted several smaller, more focused working group meetings that addressed the operational and sharing possibilities of Federal systems in the 1755-1850 MHz band, and sharing possibilities in the 2500-2690 MHz band. These outreach meetings included NTIA and Department of Defense staff as well as numerous industry stakeholders, including radio manufacturers and wireless service providers. These meetings were invaluable information exchanges - - the Federal Government could provide information on radio systems used in the band, and industry could provide their views on the feasibility of IMT-2000 systems sharing with existing Federal systems.

Going Forward

Because of the complex issues surrounding the allocation of spectrum for 3G services, there is a general agreement among Department of Commerce, the FCC and the affected Federal agencies to continue these efforts beyond the original July 2001 target date so that we may study carefully the various spectrum options available to arrive at the best possible decision. In recognition of the work that remains to be done, Chairman Powell recently sent Secretary Evans a letter suggesting that additional time to study options would be desirable and requesting that the Department work with the FCC to come up with a revised allocation plan and auction timetable. Secretary Evans responded by agreeing with the Chairman that continuing these efforts would ensure that the final 3G allocation decision would be the best possible one. He directed NTIA to work with the FCC and other Federal agencies to develop a new plan for the selection of 3G spectrum and to consider ways to achieve flexibility on the statutory auction date if such flexibility is needed to implement the new plan.

I thank you for this opportunity to share with you the views of the NTIA on this critical issue, and I would be pleased to answer any questions you may have.

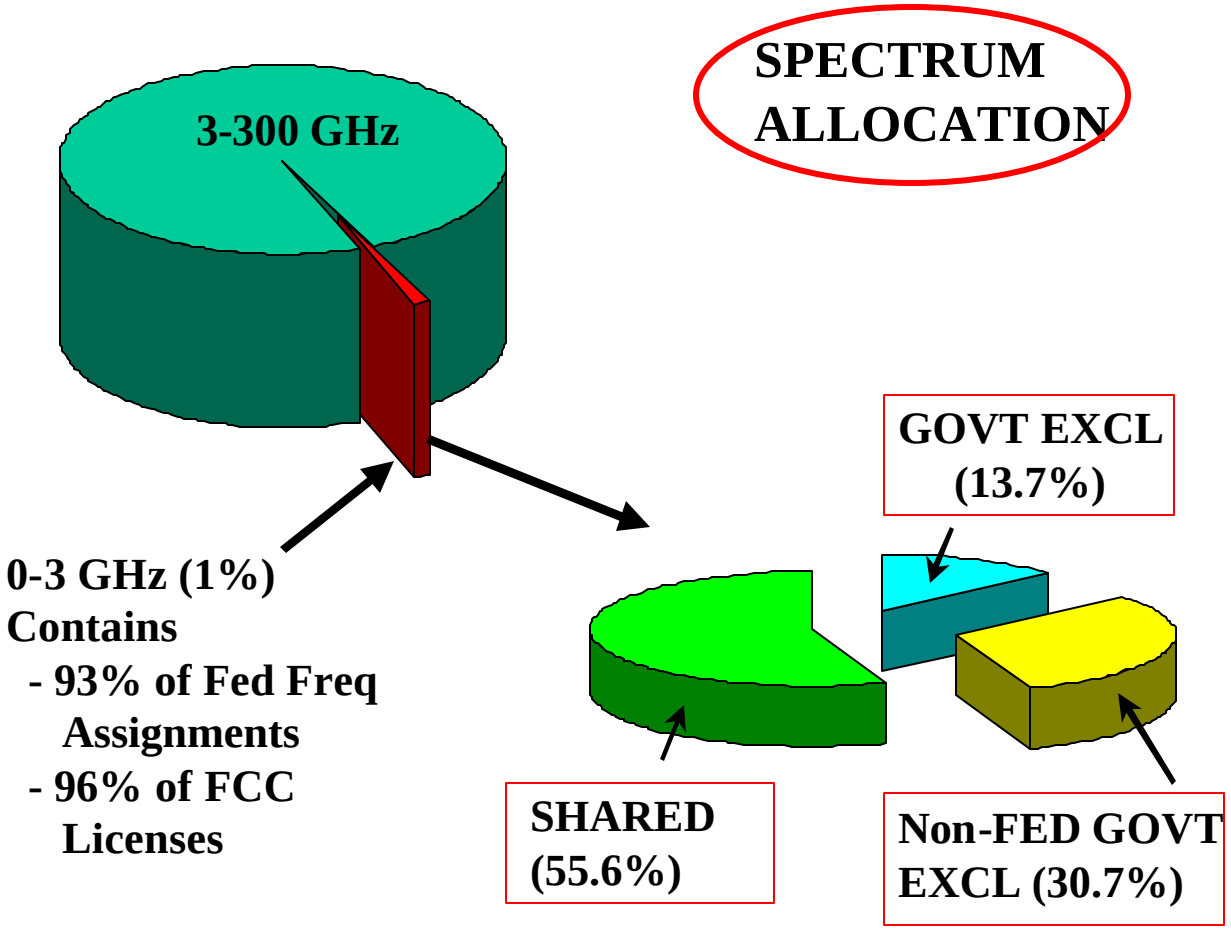
SPECTRUM ALLOCATION
3-300 GHz
0-3 GHz (1%)
Contains
- 93% of Fed Freq Assignments
- 96% of FCC Licenses
GOVT EXCL (13.7%)
SHARED (55.6%)
Non-FED GOVT EXCL (30.7%)

Figure 1

Figure 2

FEDERAL GOVT SPECTRUM USE

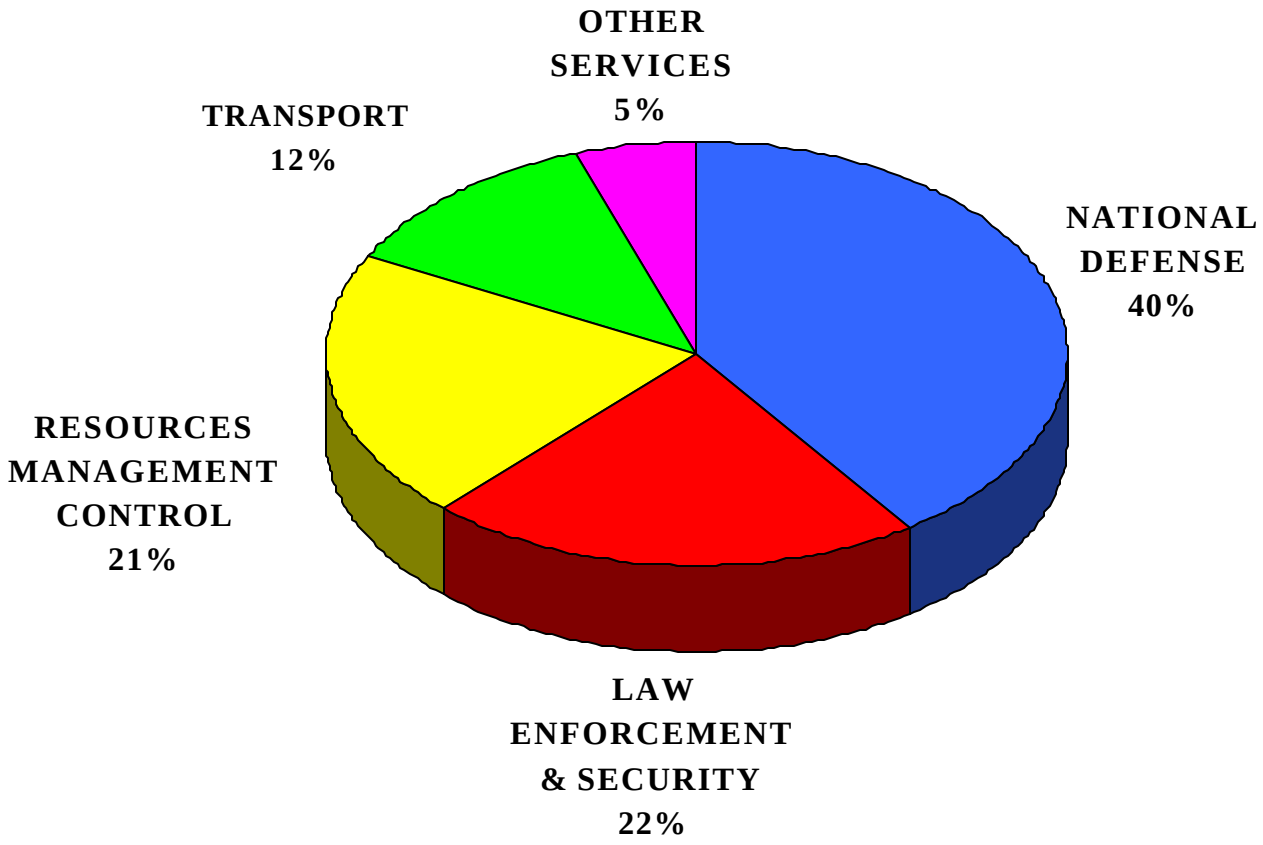

Figure 3

SHARING/SEGMENTATION OPTIONS & FEDERAL GOVT SYSTEMS